NASA Facts

National Aeronautics and
Space Administration

Goddard Space Flight Center
Greenbelt, Md. 20771
(301) 286-8955

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INTERNATIONAL EXTREME ULTRAVIOLET HITCHHIKER (IEH-3) EXPERIMENTS ON STS-95

Seven experiments make up the International Extreme Ultraviolet Hitchhiker-3 payload flying on the STS-95 Space Shuttle mission. The seven hitchhiker experiments will be attached to a carrier system in the bay of the Shuttle orbiter for the flight in space. Some experiments will be controlled from the Payload Operations Control Center at the Goddard Space Flight Center in Greenbelt, MD, while others will run automatically with pre-programmed commands loaded into their operating computers before launch.

Ultraviolet Spectrograph Telescope for Astronomical Research

The Ultraviolet Spectrograph Telescope for Astronomical Research is an extreme ultraviolet spectral imager devoted to solar system and stellar astronomy research. A spectral imager is an instrument that separates light into its component colors (also called wavelengths). Separating light in this manner allows astronomers to determine many important properties of celestial objects, such as their chemical composition, speed, temperature, density and, under certain conditions, their magnetic field. This telescope will also observe plasma sources, which are electrically charged gases found in many places throughout the universe. Sources to be observed by the telesope include the plasma located around Jupiter's moon, Io, and around hot stars (stars that put out more energy, consequently, having a greater surface temperature than Sun-like stars).

Spectrograph/Telescope for Astronomical Research

This telescope and imaging spectrograph will be used to study astronomical targets in the ultraviolet. An imaging spectrograph takes an image of an object and separates it into component colors. Targets of scientific investigation include very thin, hot gas between stars, gas ejected from exploding and dying stars, star forming regions in other galaxies, and the torus (a donut shape plasma region formed around Jupiter from the volcanic gases of its moon Io).

Solar Extreme Ultraviolet Hitchhiker

The Solar Extreme Ultraviolet Hitchhiker will measure changes in the Earth's atmosphere due to extreme radiation and daytime temperatures. This experiment is designed to obtain absolute solar extreme ultraviolet and far ultraviolet fluxes or energy output. Knowing how much radiation of this type the Sun emits helps scientists interpret these emissions from the Earth's plasmosphere (layer of the Earth's upper atmosphere com-

posed of plasma) and the Earth's magnetosphere (region of space where the Earth's magnetic field is present).

Solar Constant Experiment

This solar instrument is designed to accurately measure the solar constant, a measure of the Sun's energy output. Solar energy is the only external energy source for the Earth, thus it is a primary driver for climate change. This study is important to researchers studying the effects of global climate change. The data will be used to calibrate the solar constant level obtained by instruments mounted on other free-flying spacecraft. It will also be used to identify variation during a solar cycle (11-year period that alternates between intense solar activity and relative calm).

Petite Amateur Naval Satellite

This Navy satellite is a small, non-recoverable spacecraft developed by the Naval Postgraduate School in Monterey, CA, to be launched via a Hitchhiker Ejection System located in the Space Shuttle cargo bay. It is a mini-telecommunications satellite similar to those that handle telephone calls. It will operate in the frequency range of the amateur radio community. The satellite will enhance the education of the military officers at the Naval Postgraduate School through the development and operation of a spread spectrum satellite. A spread spectrum design allows communication satellites to capture and transmit signals that would normally be lost due to weakness or interference.

G-764 Get Away Special Experiment

The Cosmic Dust Aggregation Experiment is an experiment designed to simulate the collection of dust particles associated with the early stages of our solar system's formation. Scientists theorize that the planets formed from a disk of gas and dust surrounding the early stages of the Sun. By understanding the dust growth process in the early solar system, it is possible to gain insight into planet formation.

G-238 Get Away Special Experiment

The only biological experiment on STS-95 will study the effects of space on the life cycle of the American cockroach. The Get Away Special-238 payload is sponsored by the American Institute of Aeronautics and Astronautics (National Section) and managed by students at DuVal High School in Lanham, MD. The roach experiment will consist of a habitat that has been divided into three sections: one section each for young adults, nymphs and eggs. Small holes in the habitat container will supply air to the habitat. In each section, water will be supplied in small vials with a wick through the top and food will be provided in the form of dog biscuits.

The Hitchhiker program is managed by the Shuttle Small Payloads Projects Office at Goddard. The mission manager is Tom Dixon. Find more information on the Shuttle Small Payloads Project at http://sspp.gsfc.nasa.gov/hh/hh.html .